DOCUMENT RESUME

ED 174 948 CS 004 932

AUTHOR Baker, Linda
TITLE Do I Understand or Do I Not Understand: That is the Question. Reading Education Report No. 10.
INSTITUTION Bolt, Beranek and Newman, Inc., Cambridge, Mass.; Illinois Univ., Urbana. Center for the Study of Reading.
SPONS AGENCY Advanced Research Projects Agency (DOD), Washington, D.C.; National Inst. of Education (DHEW), Washington, D.C.
PUB DATE Jul 79
CONTRACT 400-76-0116; N00123-77-C-0622
NOTE 27p.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Cognitive Processes; *Critical Reading; Elementary Secondary Education; Higher Education; *Questioning Techniques; *Reading Comprehension; *Reading Processes; *Reading Research
IDENTIFIERS *Center for the Study of Reading (Illinois)

ABSTRACT

This paper is intended as an introduction to the concept of comprehension monitoring, which is an important component of reading and involves evaluating and regulating one's ongoing comprehension processes. A discussion of research that investigated comprehension monitoring with both children and adults is presented and the implications for education are considered with respect to existing factors that influence the development of monitoring strategies. (Author/MKM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED174948

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

CENTER FOR THE STUDY OF READING

Reading Education Report No. 10

DO I UNDERSTAND OR DO I NOT UNDERSTAND: THAT IS THE QUESTION

Linda Baker
University of Illinois at Urbana-Champaign

July 1979

University of Illinois
at Urbana-Champaign
51 Gerty Drive
Champaign, Illinois 61820

Bolt Beranek and Newman Inc.
50 Moulton Street
Cambridge, Massachusetts 02138

Preparation of this paper was supported by the National Institute of Education under Contract No. US-NIE-C-400-76-0116 and by the Advanced Research Projects Agency under Contract No. N00123-77-C-0622. I would like to thank Steve Asher, Dolores Durkin, Glenn Kleiman, and Jean Osborn for their helpful comments on earlier versions of this paper.

CS004932

Abstract

Comprehension monitoring is an important component of reading and involves evaluating and regulating one's ongoing comprehension processes. This paper is an introduction to the concept of comprehension monitoring and discusses research investigations of comprehension monitoring with both children and adults. The implications for education are considered with respect to existing factors that influence the development of monitoring strategies.

Do I Understand or Do I Not Understand: That is the Question

No one would argue with the claim that comprehension is the primary goal of reading. What many people may not have considered is that monitoring comprehension is a critical component of reading. Comprehension monitoring involves evaluating and regulating one's own ongoing comprehension processes. To evaluate is to keep track of the success with which comprehension is proceeding, and to regulate is to ensure that the process continues smoothly, often by taking remedial action when comprehension fails. Thus, readers who monitor their comprehension of text are likely to know when they understand, when they don't understand, and when they partially understand. In addition, they know to test whether their understanding is adequate for the purpose at hand, and when and how to deal with comprehension difficulties.

A little introspection about the way we read will reveal that we usually are not aware of asking ourselves if we understand. Yet some sort of self-questioning must occur; otherwise, how would we know when we fail to understand? For most of us, most of the time, understanding comes relatively automatically. We don't have to stop and try to figure out the meaning of each word, phrase, or sentence. But occasionally, something warns us of a problem, and we then focus our attention more directly on what we are reading as we attempt to understand.

Most mature readers probably have experienced two extremes of comprehension monitoring at some time or another. One extreme occurs when our attention wanders from the text without our awareness. We continue "reading" for a number of paragraphs or even pages, then suddenly realize we have no idea of what it was we just "read." Clearly, this is a situation where we were not keeping track of comprehension at all. The other extreme of monitoring occurs when we read highly technical, unfamiliar text. In this situation, we must keep a constant check on our understanding, which may result in proceeding through the text word by word. Neither of these extremes is optimal; we must, of course, keep track of our comprehension, but if we stop to check our understanding of every word, it is virtually impossible to grasp the overall meaning.

There are several different levels at which comprehension can be monitored. The simplest level involves making sure that individual words are understood. Most readers are likely to know when a word comprehension failure occurs, and they know how to remedy this problem: consult a dictionary, ask someone the meaning of the word, or try to figure out the meaning from the context of the passage in which the word occurs. A more complex level of monitoring involves checking that the ideas expressed in the text make sense and are consistent with one another. This process requires that readers consider the meanings not only of individual sentences but also the relationships among sentences within the text. An even more complex level of monitoring involves a consideration of how the ideas expressed in the text relate to what the reader already knows. All three

levels of comprehension monitoring are critical components of comprehension, and the proficient reader should be able to monitor effectively at all levels.

Ideally, comprehension monitoring is a flexible process, adapted to the characteristics of the material and the purposes for reading it. Readers need to set a criterion for deciding whether understanding is adequate for their purposes. This is relatively easy to do when following instructions because there is a specific goal to be achieved. Even if an initial reading leads to a feeling of understanding, actual execution of the instructions may prove otherwise. Monitoring the comprehension of other kinds of text is more difficult, however, because the criteria for successful comprehension are less explicit. Readers must decide for themselves how well they need to understand and must select their own standards for evaluation. Failure to select appropriate standards may well contribute to the difficulties many students experience in learning from text (Anderson, in press). Students who feel they understand the assigned textbook material may only become aware of their incomplete understanding when they are tested on it.

The Relationship of Comprehension Monitoring to Critical Reading and Study Skills

There are a number of commonalities between comprehension monitoring and two traditional concepts: critical reading and study skills. Critical reading, according to Robinson (1964), involves judging the

"veracity, validity, and worth of what is read, based on criteria or standards developed through previous experience." Torrance's (1967) conception of creative reading captures even more of the essence of comprehension monitoring: ". . . the creative reader sensitizes himself to problems, gaps in knowledge, missing elements, something incorrect." Comprehension monitoring and critical reading share an evaluation component but not the one of regulation. If critical reading leads to an awareness of a problem, comprehension monitoring enables one to deal with it.

It should be apparent that instruction in critical reading can foster the evaluation skills required to monitor one's own understanding. According to Wolf, King, and Huck (1968), the ability to analyze and evaluate ideas does not develop naturally with maturity but must be taught. They conclude, however, that existing instruction in critical reading is often inadequate. Because instruction is typically postponed until children have become fluent readers, "the habit of indiscriminate acceptance of printed material may become so well established that later instruction in these skills would be extremely difficult" (Wolf et al., p. 435). A second inadequacy lies in the practice of limiting emphasis on critical reading to a specific class period. As Goodman (1976) points out:

> Much of the reading required of children in school deters rather than promotes critical reading. If there is always one right answer to a question, if the teacher settles an argument by pointing out that the book has given the information on page 38 (implying that books are

never wrong), if children are led to believe that they are not competent to judge the merits of their social studies or science books, then the teacher cannot turn around and ask children to read an essay in their reading text critically. One either reads critically or one does not. The strategies required to read critically must be developed for all reading tasks and not just for special ones designed for instruction. (p. 469)

It seems clear that these instructional practices should be changed, especially given the evidence that many adults do not engage in critical reading (Wolf, 1967). This conclusion is further bolstered by experiments to be described in this paper showing that many college students do not evaluate their comprehension carefully enough to detect confusions.

The second traditional area of instruction related to comprehension monitoring is that of study skills. The research reported in this paper is part of a project specifically aimed at training effective techniques for learning by reading. The motivation for the project was that traditional approaches to studying focus primarily on behaviors to engage in before reading and after reading, but not during reading. For example, Robinson's (1941) SQ3R technique instructs the student to engage in survey and question activities before reading, and to engage in recitation, reflection, and review activities after reading. The approaches do not stress evaluating understanding during reading and they provide few guidelines for dealing with comprehension difficulties.

One exception appears in a "how to study" guide by Locke (1975). Locke introduces the concept of "study monitoring," which is similar to the concept of comprehension monitoring:

> Studying actually requires a double or split mental focus. On the one hand, you need to be focused on the material itself (that is, on learning it). At the same time, however, you need to be constantly checking to see that you are actually performing those mental operations that produce learning. In short, you need to monitor your mental processes while studying. This does not mean you should monitor every second; this would obviously make it impossible to learn the material. Your monitoring faculty should operate somewhat like a night watchman inspecting a building who periodically turns on his flashlight to check up on things as he makes his rounds. (The flashlight in this analogy is your monitoring faculty.) (Locke, 1975, p. 126)

Some of the monitoring activities Locke suggests students engage in are to make sure their minds are focused on the subject matter of the book and to keep track of their purposes for reading. They should also be on the alert for feelings of false understanding, which can arise from skipping over difficult material. Although Locke's comments about monitoring are worthwhile, his suggestions on how to develop monitoring skills simply deal with practice. What is needed are more systematic techniques for providing direct instruction.

Background Research on Comprehension Monitoring

Despite the obvious importance of monitoring one's own comprehension during reading, relatively little research has been directed to the process. However, psychology has seen a renewed concern with the reading process, and many investigators have become interested in "metacognition," or the awareness and control of one's own cognitive processes, including comprehension (Brown, in press; Flavell, 1978). Thus, we can anticipate that our limited knowledge about comprehension monitoring will soon be supplemented. Some of the experiments that have already been done will now be considered.

One indirect way of studying comprehension monitoring is to ask people to reflect on their comprehension processes. Olshavsky (1976-77) did this by asking subjects to talk aloud about their thoughts and expectations while they were reading a passage clause by clause. Earlier, Smith (1967) and Strang and Rogers (1965) examined retrospective reports from subjects who were asked to talk about their reactions to a passage after they finished reading it. Techniques such as these have revealed variety in the strategies people use in an effort to comprehend, thus confirming Thorndike's (1917) view of reading as a problem solving process. The results also suggest that poor comprehension monitoring may be characteristic of poor readers. Though good and poor high school readers did not seem to differ in their identification and resolution of comprehension difficulties at the level of words and clauses (Olshavsky, 1976-77), differences in more sophisticated monitoring were found. For example, poor readers had

less insight into the procedures they used during reading (Smith, 1967; Strand & Rogers, 1965), and, in addition, were less likely to seek clarification of poorly understood information (Strang & Rogers, 1965).

Because the subjects in these experiments were specifically instructed to reflect on their comprehension processes, the studies are able to provide little information about spontaneous comprehension monitoring. Moreover, since the experimenters had no control over which specific sections of text readers might find confusing, it is difficult to draw conclusions about how effectively readers were monitoring their comprehension. These shortcomings can be remedied by manipulating the comprehensibility of the text itself; failures to notice deliberately introduced confusions would then provide evidence of poor comprehension monitoring. Such a method has been used to study the development of comprehension monitoring skills in a listening task (Markman, 1977). Children in first and third grades listened to simple instructions on how to play a game or perform a magic trick. In both cases, information was left out that was crucial to following the instructions. The children were told that their help was needed in coming up with good instructions and that they should let the experimenter know if something was omitted or unclear. The instructions for the card game were as follows:

> We each put our cards in a pile. We both turn over the top card in our pile. We look at cards to see who has the special card. Then we turn over the next card in our pile to see who has the special

card this time. In the end the person with the most cards wins the game.

There was no mention of what the "special card" might be. Markman found that the third graders realized the instructions were incomplete much more readily than did the younger children. It was often not until the first graders actually tried to carry out the instructions that they realized they didn't understand. They may have felt they understood when in fact they did not, suggesting that they had been listening passively and not actively evaluating whether the instructions made sense.

Markman (1978) has also provided evidence that the effectiveness of one's comprehension monitoring may depend not only on age but also on the nature of the materials and the task demands. Children in third, fifth, and sixth grades listened to short essays containing inconsistent information and then answered questions designed to assess awareness of the inconsistencies. Following is an example from a passage about fish:

> Fish must have light in order to see. There is absolutely no light at the bottom of the ocean. It is pitch black down there. When it is that dark the fish cannot see anything. They cannot even see colors. Some fish that live at the bottom of the ocean can see the color of their food; that is how they know what to eat.

The obvious inconsistency here is that fish cannot see colors at the bottom of the ocean, yet some can see the color of their food. Children in all grades tested were equally poor at noticing the inconsistencies.

Although third graders in the 1977 study did report failures to understand instructions, children of the same age and older failed to report confusions in the essays. However, when specifically warned about the inconsistencies, a greater proportion of children, primarily sixth graders, reported them. This indicates that comprehension monitoring is easier when one has some idea of what to look for.

Markman's experiments with listening suggest there may be developmental changes in comprehension monitoring and, further, that the nature of the materials and the task demands are both influential variables. It has also been shown that poor readers at the high school level have less awareness of their comprehension processes than do good readers (Smith, 1967; Strang & Roger, 1965). If correct, these findings indicate that comprehension monitoring is not an ability that automatically develops with maturity but is, instead, highly dependent on knowledge and expertise. Despite attention to the related areas of critical reading and study skills, instruction in comprehension monitoring is not typically included in school curricula. Children seem to be left on their own to acquire expertise. Since many students who have entered college still experience difficulty in the task of learning by reading (Anderson, in press), it may be that their comprehension monitoring skills are inadequate. If this is so, instruction in comprehension monitoring throughout the school years may be warranted.

Comprehension Monitoring in Mature Readers

The purpose of one research project carried out at the Center for the Study of Reading was to determine whether poor comprehension monitoring does, in fact, occur in mature readers. Given our interest in the task of learning by reading, the subject population consisted of college students. The experiments to be described were carried out with the help of Richard I. Anderson, Sally N. Standiford, and Dean Radin. The stimulus materials were passages dealing with topics in world history, each consisting of three relatively independent paragraphs. The middle paragraph of each passage was modified to contain one of three types of confusions: (1) inappropriate logical connective, where expectations about the kind of information that will follow a particular connective are violated (e.g., the word "therefore" was substituted for the word "however"); (2) inconsistent information, where ideas expressed in one sentence conflict with those in one or more other sentences (e.g., the word "backwards" was substituted for the word "advanced" in a sentence evaluating the Inca economy, while subsequent sentences continued to describe positive aspects of the economy); (3) ambiguous reference, where the context does not specify which of several previously introduced nouns is the referent of the nonspecific phrase (e.g., the phrase "one type of novel" is substituted for "the pastoral novel" in a context where three different novel types are under discussion). For each of the three confusion types, one passage contained a confusion at the "main point" level, while another contained a "detail" level confusion.

In one part of the research (Baker, 1979), 14 college students read the passages without being told that confusions were present. They were then asked to recall as much as they could from the target paragraph. After that, they were informed that the paragraphs contained confusions and were asked to report them. They were allowed to reread the paragraphs if necessary. Students were asked whether or not they noticed the confusions during reading, how they interpreted them, and how the confusions affected their overall understanding of the paragraph. Confusions involving a main point of a paragraph were detected more frequently than those involving details. Students were most successful at catching inconsistent facts and least successful at catching inappropriate connectives. This latter finding was particularly interesting since many study skills guides claim that connectives play an important role in comprehension (e.g., Adams & Spira, 1978; Wood, 1978; Sparks & Johnson, 1971). The guides recommend that students pay special attention to words such as "similarly," "therefore," and "however" because these kinds of words provide clues about what kinds of information follow. But in our task, students were not sensitive to these clues.

The most interesting results came from subjects' comments about how they dealt with the confusing information during recall and how they thought the confusions affected their comprehension. These retrospective reports made it apparent that, on many occasions, failure to report a confusion was not due to failure to monitor comprehension but, rather, to the use of "fix-up" strategies for resolving comprehension problems. A few of these strategies will now be discussed.

The most frequent strategy was to make an inference to supplement the information explicitly presented in the text. Subjects decided that some relevant information had not been mentioned in the text and used their prior knowledge to bridge the gap. Many students applied this strategy in dealing with inconsistencies. One such inconsistency appears in the paragraph below:

> The Inca economy was extremely backward for its time. The chief occupation and source of income was farming. Farming methods were quite sophisticated and included scientific irrigation, fertilization, and use of terraces. Agricultural products were therefore plentiful and of good quality. A fundamental requirement of the government was that every able-bodied subject must pay taxes. These taxes were paid through labor rather than through a medium of exchange. As a result, unemployment was virtually absent.

The first sentence of the paragraph sets up the inconsistency with the claim that the economy was backward. Although no other statement explicitly contradicts this, subsequent information provides disconfirming evidence: a backward economy is unlikely to have such successful farming efforts and no unemployment.

Almost three-quarters of the students noticed this inconsistency, but less than half said they detected it during the initial reading. This was the case because when they first encountered the inconsistency, they made inferences to resolve it. Only when explicitly instructed to find a

problem did they focus in on it. When asked to recall the paragraph, many subjects modified the information to be more consistent with the general idea of a favorable economic situation. For example, one subject recalled, "The economic condition of the country was fairly developed and efficient." Another recalled, "The economy seemed like it worked very well, at least in their own society." In posttest questioning, this person explained her interpretation of the inconsistency: "The economy could still be backward yet have excellent equipment." Another subject included a resolving inference in her recall response: "The economy was backward. . . . Although they possessed relatively modern technology, they were not organized in an efficient economic manner." Still another student's explanation of how he dealt with the confusion was, "I thought another part was backward (such as distribution) and the author just failed to explain it. I kept waiting for an explanation. . .".

A number of additional strategies for dealing with the confusions were also observed. One was to look back at previously read information, checking to see if some crucial bit of information had been overlooked. Another strategy was to make a mental note that a problem had occurred, but to continue reading in the hope that clarification would occur later in the text. Students also reported that they realized there was a problem but decided it was trivial and not worth the effort of trying to resolve. Others explained that they were reading for general ideas and so understood the main theme even if a single sentence seemed to be in conflict. Occasionally, authors or typists were blamed for a confusion, and students

reported that a sentence or word had been omitted. Other students tried to make sense of the passage, failed, and gave up. As one subject said, "I more or less got frustrated and just threw my hands up."

The study also revealed causes of detection failures other than poor comprehension monitoring. One was that students assigned alternative interpretations to the text, leading to "misunderstandings." They felt they understood but in fact did not get the meaning the author intended to convey. In addition, subjects sometimes failed to detect detail confusions because they were reading for general ideas and not devoting attention to details. Another cause of detection failure was reading sentence by sentence without integrating across sentences. Since all of the confusions required consideration of two or more sentences, integration was essential. (It was rather surprising to find that a mature reader consciously used what seems like an immature strategy: "I read the material as individual sentences, not paragraphs . . . . I was just trying to collect facts--I didn't put them together.")

Because the experiment showed that failure to report a confusion was not necessarily evidence of poor comprehension monitoring, a second study was conducted to observe reading behavior more directly using the PLATO Computer System (Baker, Anderson, Standiford, & Radin, 1979). Subjects sat at individual stations equipped with a keyboard and a screen similar to a typewriter and television. Passages were presented on the screen sentence by sentence and subjects controlled the amount of time they spent reading each sentence by pressing keys on the keyboard. The computer

recorded reading times on each exposure to a sentence, as well as the pattern of movement through the text; that is, when and where the subject reread previous sentences. We expected to find differences in reading behavior depending on the presence or absence of confusion. If subjects were monitoring their comprehension, they should spend more time reading the target information, and/or look back at previously read information more frequently in an attempt to resolve or verify the problem.

The materials for the experiment were similar to those used previously, but the confusions were confined to inconsistencies. Again, an inconsistency involved either the main idea of the paragraph or a detail. We expected that subjects would be more likely to notice the main idea inconsistencies than the detail, since the statement of the main idea conflicted with virtually all of the other sentences in the paragraph, while the detail statement conflicted with only one. A second manipulation in the experiment was to inform half of the subjects prior to reading that inconsistencies were present and that they would be asked to report them later. We expected that the subjects who were explicitly instructed to monitor their comprehension would spend more time reading the passages than the noninstructed subjects and, in addition, that they would be more likely to notice the confusions.

Ninety undergraduates served as subjects. Each read one passage containing a main point inconsistency, one containing a detail inconsistency, and another containing no inconsistencies. After reading all the passages, subjects were told that inconsistencies had been present and

were asked to indicate which line, if any, they thought contained the confusion in each target paragraph. If subjects reported a confusion, they were then asked to state whether they had noticed it during reading and whether they thought it involved a main point or a detail.

As expected, subjects spent more time reading passages containing inconsistencies and looked back more frequently than when the passages were consistent. This was true for both main points and details. Surprisingly, there was no effect from the instructions on the subjects' reading behavior; the performance of subjects who were warned that inconsistencies were present was indistinguishable from that of uninformed subjects. Subjects were quite good at detecting both main point and detail inconsistencies, as well as correctly reporting that no inconsistencies were present. The overall detection probability was about .70. Again, there were no differences between the two instructional groups: Subjects instructed to monitor for inconsistencies were no more likely to detect them than were subjects who were simply instructed to study. What this might mean is that if subjects monitor their comprehension effectively, they do so with or without specific instructions. And those subjects who are not good monitors do not monitor well even when told to do so.

Thus, this experiment has provided some evidence not only that college students test their understanding of material they have read but also that they do so during the actual process of reading. If they encounter a confusion, they devote extra time to studying it, and they reread previous sentences in an effort to clarify their understanding.

Conclusions and Implications

This paper has provided an introduction to the notion of comprehension monitoring and has reviewed experimental studies of monitoring skills in both children and adults. The studies by Markman have shown that there are developmental differences in the extent to which children evaluate passages for consistency and completeness as they listen to them, and the research by Baker and her colleagues has shown that college students frequently fail to detect confusions. However, failure to report a confusion is not in itself a sensitive index of comprehension monitoring because subjects often made inferences to resolve the confusions without realizing they had done so. In addition, their purposes for reading were not always compatible with the implicit task demand of confusion detection; that is, they were reading for general understanding. Clearly, it is not enough to know whether or not a confusion was detected; one must also know how the confusion was interpreted and how extensively it had been processed.

In summary, the research has shown that some college students can and do monitor their comprehension, though not always consistently. If they experience difficulty in understanding, they have a variety of procedures available to assist them in coming up with a plausible interpretation of the text. Moreover, these procedures are sometimes applied so automatically that readers are unaware that their interpretation of the text may not be the one the author intended to convey. There are also large individual differences in the way readers monitor their comprehension. It thus appears that the question of interest is not whether readers monitor their

comprehension, but rather how they monitor it. Future work is planned to investigate differences between good and poor readers and to more directly test the hypothesis that comprehension monitoring is crucial to good comprehension. We hope to identify individuals who are weak at comprehension monitoring, give them training designed to improve their monitoring abilities, and assess the effect of such training on their reading comprehension.

The finding that many subjects who failed to notice the confusions during reading were able to detect them when specifically instructed to do so has an important educational implication. Although many students are capable of comprehension monitoring, they don't always do it on their own initiative. This lack of motivation for careful reading may stem from certain factors existing in classrooms at all grade levels. One such factor is exposure to poorly written material. If ideas are poorly expressed, it is a struggle for students to grasp the intended meaning. This may discourage them from carefully evaluating their understanding. In addition, they may attribute their failures in understanding poorly written text to themselves rather than to the author.

A second factor is that understanding is often monitored by external agents rather than by the students themselves. Wertsch (1978) and Schallert and Kleiman (1979) report that teachers assume much of the responsibility of cognitive monitoring for children, keeping track of what they know and don't know, what they understand and don't understand, and in other ways guiding them through the attainment of some goal. Even when

students reach high school and college, the need for comprehension monitoring is sometimes removed. For example, students engaged in computer managed instruction (CMI) do not have to ask themselves if they understand the material; the computer informs the students during each encounter whether or not they understand (Anderson, in press). Similarly, programmed instruction (PI) textbooks eliminate the need for self-questioning by guiding students step-by-step through the learning process.

There are both advantages and disadvantages to this educational practice of monitoring students' comprehension for them. On the one hand, it ensures that students understand the material by keeping a careful check on their understanding and by providing appropriate measures for clarifying comprehension failures. On the other hand, it may foster passive reading and study habits: Why should students make the effort to check their understanding if someone else will do it for them? In fact, the programmed techniques were originally developed because many students did not do well with traditional textbook-lecture formats. Perhaps this problem could have been avoided had the students received adequate instruction in comprehension monitoring.

References

Adams, W. R., & Spira, J. R. Reading beyond words. New York: Holt, Rinehart & Winston, 1978.

Anderson, T. H. Study strategies and adjunct aids. In R. J. Sprio, B. C. Bruce, & W. F. Brewer (Eds.), Theoretical issues in reading comprehension. Hillsdale, N.J.: Erlbaum, in press.

Baker, L. Comprehension monitoring: Identifying and coping with text confusions (Tech. Report to appear). Urbana: University of Illinois, Center for the Study of Reading, 1979.

Baker, L., Anderson, R. I., Standiford, S. N., & Radin, D. I. Comprehension monitoring: Sensitivity to text confusions. Paper presented at the American Educational Research Association meetings, San Francisco, April 1979.

Brown, A. L. The development of memory: Knowing, knowing about knowing, and knowing how to know. In H. W. Reese (Ed.), Advances in child development and behavior (Vol. 10). New York: Academic Press, 1975.

Brown, A. L. Metacognitive development and reading. In R. J. Sprio, B. C. Bruce, & W. F. Brewer (Eds.), Theoretical issues in reading comprehension. Hillsdale, N.J.: Erlbaum, in press.

Flavell, J. H. Metacognitive development. In J. M. Scandura & C. J. Brainerd (Eds.), Structural/process theories of complex human behavior. Alphen a. d. Rijn, The Netherlands: Sijthoff and Noordhoff, 1978.

Flavell, J. H., & Wellman, H. M. Metamemory. In R. V. Kail, Jr. & J. W. Hagen (Eds.), Perspectives on the development of memory and cognition. Hillsdale, N.J.: Erlbaum, 1977.

Goodman, K. S. Behind the eye: What happens in reading. In H. Singer & R. B. Ruddell (Eds.), Theoretical models and processes of reading. Newark, Del.: International Reading Association, 1976.

Locke, E. Q. A guide to effective study. New York: Springer, 1975.

Markman, E. M. Realizing that you don't understand: A preliminary investigation. Child Development, 1977, 46, 986-992.

Markman, E. M. Realizing that you don't understand: Elementary school children's awareness of inconsistencies. Unpublished paper, Stanford University, 1978.

Olshavsky, J. Reading as problem solving: An investigation of strategies. Reading Research Quarterly, 1976-77, 12, 654-674.

Robinson, R. P. Effective study. New York: Harper & Row, 1941.

Robinson, H. M. Developing critical readers. In R. G. Stauffer (Ed.), Dimensions of critical reading. Newark, Del.: University of Delaware, 1964.

Schallert, D. L., & Kleiman, G. M. Why the teacher is easier to understand than the textbook (Reading Education Report No. 9). Urbana: University of Illinois, Center for the Study of Reading, June 1979.

Smith, H. K. The responses of good and poor readers when asked to read for different purposes. Reading Research Quarterly, 1967, 3, 53-84.

Sparks, J. E., & Johnson, C. E. Read right! Comprehension power. Beverly Hills: Glencoe, 1971.

Strang, R., & Rogers, C. How do students read a short story? English Journal, 1965, 54, 819-823, 829.

Thorndike, E. L. Reading as reasoning: A study of mistakes in paragraph reading. Journal of Educational Psychology, 1917, 8, 323-332.

Torrance, E. P. Developing critical readers. In M. L. King, B. D. Ellinger, & W. Wolf (Eds.), Critical reading. Philadelphia: Lippincott, 1967.

Wertsch, J. V. Adult-child interaction and the roots of metacognition. The Quarterly Newsletter of the Institute for Comparative Human Development, 1978, 2, 15-18.

Wood, N. V. College reading and study skills. New York: Holt, Rinehart & Winston, 1978.

Wolf, W. Teaching critical reading through logic. In M. L. King, B. D. Ellinger, & W. Wolf (Eds.), Critical reading. Philadelphia: Lippincott, 1967.

Wolf, W., King, M. C., & Huck, C. S. Teaching critical reading to elementary school children. Reading Research Quarterly, 1968, 3, 435-498.

CENTER FOR THE STUDY OF READING

READING EDUCATION REPORTS

No. 1: Durkin, D. ***Comprehension Instruction—Where are You?,*** October 1977. (ERIC Document Reproduction Service No. ED 146 566, 14p., HC-$1.67, MF-$.83)

No. 2: Asher, S. R. ***Sex Differences in Reading Achievement,*** October 1977. (ERIC Document Reproduction Service No. ED 145 567, 30p., HC-$2.00, MF-$.83)

No. 3: Adams, M. J., Anderson, R. C., & Durkin, D. ***Beginning Reading: Theory and Practice,*** November 1977. (ERIC Document Reproduction Service No. ED 151 722, 15p., HC-$1.67, MF-$.83)

No. 4: Jenkins, J. R., & Pany, D. ***Teaching Reading Comprehension in the Middle Grades,*** January 1978. (ERIC Document Reproduction Service No. ED 151 756, 36p., HC-$2.06, MF-$.83)

No. 5: Bruce, B. ***What Makes a Good Story?,*** June 1978. (ERIC Document Reproduction Service No. ED 158 222, 16p., HC-$1.67, MF-$.83)

No. 6: Anderson, T. H. ***Another Look at the Self-Questioning Study Technique,*** September 1978. (ERIC Document Reproduction Service No. ED 163 441, , HC-$1.67, MF-$.83)

No. 7: Pearson, P. D., & Kamil, M. L. ***Basic Processes and Instructional Practices in Teaching Reading,*** December 1978. (ERIC Document Reproduction Service No. ED 165 118, 29p., HC-$2.06, MF-$.83)

No. 8: Collins, A., & Haviland, S. E. ***Children's Reading Problems,*** June 1979.

No. 9: Schallert, D. L., & Kleiman, G. M. ***Some Reasons Why Teachers are Easier to Understand than Textbooks,*** June 1979.

No. 10: Baker, L. ***Do I Understand or Do I not Understand: That is the Question,*** July 1979.